

New Books

L.A. Witting, Book Review Editor



Aliphatic Chemistry, Vol. 5, by A. McKillop (The Chemical Society, Burlington House, London, 1977, 337 p., \$47).

Aliphatic Chemistry, Vol. 5 of the series "Specialist Periodical Reports" is similar in scope and format, but more extensive in content, to the previous four volumes in the series. The high standards established in the earlier volumes are maintained in this one. Numerous important and new reactions of aliphatic compounds are described and interpreted in this outstanding survey. Chapter headings are entitled as follows: Chapter 1: Alkanes, Acetylenes, Allenes, and Olefins, by J.C. Saunders and B.P. Swann; Chapter 2: Functional Groups Other than Alkanes, Acetylenes, Allenes, and Olefins, by E.F.V. Scriven; Chapter 3: Naturally Occurring Polyolefinic and Polyacetylenic Compounds, by G. Pattenden; Chapter 4: Chemistry of the Prostaglandins, by K.B. Mallion; Chapter 5: Fatty Acids and Related Compounds, by F.D. Gunstone.

As in the previous reviews, the senior reporter, A. McKillop, deserves our thanks for an outstanding book. As in the previous volumes, this book is a veritable lodestone of information of importance to lipid chemists, with Chapters 4 and 5 being particularly relevant. But that does not tell the whole story; other chapters have sections devoted to olefins, carboxylic acids, carboxylic acid anhydrides, lactones, carboxylic acid esters, carboxylic acid amides, nitriles, alcohols, and amines. All of these subjects are of importance to investigators working with long chain compounds.

A particularly desirable feature of this and the previous volumes is the provision of numerous reaction and mechanistic schemes that are extremely helpful in unraveling extremely complex chemistry. Many new organic chemical reagents are described which this reviewer found extremely valuable not only for review purposes but also as a source of new and valuable information to add to his knowledge on the scope and limitations of newer organic reagents. All lipid chemists interested in synthetic and/or mechanistic organic chemistry should either own this book or be sure that their library purchases it. The price seems a bit high, but, in these days of rising prices, the price does not seem so outlandish as in previous years. Purchasers should note, however, that the literature for 1974 and 1975 is covered.

Volume 5 will be the last in the present series as the Publications Committee of The Chemical Society has decided to replace this series by new titles, "General and Synthetic Methods" and "Aliphatic and Related Natural Product Chemistry." It is hoped that these substitute volumes will be as thorough and as complete as the current series has been.

The book is remarkably free of typographical and other errors, it is clearly printed, and reactions and interpretations are given adequate space for easy reading and interpretation.

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Aromatic and Heteroaromatic Chemistry, Vol. 5, Senior Reporters C.W. Bird and G.W.H. Cheeseman (The Chemical Society, Burlington House, London, 1977, 566 p., \$70).

Volume 5 of the series covers the literature almost ex-

clusively during 1975 and 1976 (C.A., 83 and 84). As usual, the senior reporters have done an outstanding job of organization and presentation of extremely complex material. The content of the survey can best be illustrated by indicating the chapter titles: Chapter 1: Ring Systems of Topical Interest, by P.J. Garratt; Chapter 2: Intermolecular and Intramolecular Cyclization Reactions in Ring Synthesis, by C.W. Bird and G.W.H. Cheeseman; Chapter 3: Cycloaddition Reaction, by G.V. Boyd; Chapter 4: Ring Transformations, by H.C. van der Plas and J.W. Streif; Chapter 5: Electrophilic Substitution on Carbon, by J.H. Ridd; Chapter 6: Electrophilic Substitution on Heteroatoms, by J.H. Lister; Chapter 7: Nucleophilic Substitution, by G.M. Brooke; Chapter 8: Aromatic Substitution by Free Radicals, Carbenes, and Nitrenes, by S.R. Challand; Chapter 9: Addition Reactions, by G.V. Boyd; Chapter 10: Ring-Cleavage Reactions, by T.L. Gilchrist; Chapter 11: Reactions of Substituents, by B.C. Uff; Chapter 12: Porphyrins and Related Compounds, by K.M. Smith; Chapter 13: Naturally Occurring Oxygen-Ring Compounds, by R.D.H. Murray; Chapter 14: Other Naturally Occurring Compounds, by J.R. Lewis.

Although the volume is devoted to aromatic and heteroaromatic chemistry, with few references to aliphatic compounds, the volume should be extremely useful to lipid chemists interested in the organic chemistry of those compounds. Many intriguing and novel reactions are described which should be applicable to long chain aliphatic compounds containing double bonds and other functional groups. The book is remarkably free of typographical errors, the material is presented with excellent clarity, and the book is recommended for purchase by all libraries. The price is a bit stiff, but the trend these days seems to be for books to cost more and more thereby excluding the individual purchaser.

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HPTLC: High Performance Thin-Layer Chromatography, Edited by A. Zlatkis and R.E. Kaiser (Elsevier Scientific Publishing Co., Amsterdam, and Institute of Chromatography, Bad Dürkheim, 1977, 240 p., \$29.50).

The growing popularity of high performance liquid chromatography has left many chemists with the impression that thin layer chromatography will shortly follow paper chromatography into obsolescence: this impression may be heightened by the recent publication of several books on high performance liquid chromatography. However, now TLC has taken advantage of research that improved HPLC in using smaller, very uniformly sized particles. This book is the first source of convenient information apart from the original publications themselves. Therefore, it will be of interest to those who wish to take full advantage of precoated Silica HPTLC plates that recently became available.

There are nine chapters contributed by six authors which has unavoidably led to some overlapping. The subjects covered are theory, the advantages of the new plates, comparisons between conventional TLC and HPTLC plates, the latter using both linear and circular chromatography. Among the new techniques required none is more import-

ant than application of nanoliter samples. Without small spot sizes almost none of the advantages of HPTLC is gained. Considerable space is devoted to circular chromatography, and with CAMAG's U-chamber device that borrows much from HPLC. Quantitation using densitometric scanning is shown with as many as 35 samples on a single 10 x 10 cm plate, developed linearly. A plate is illustrated that indicates the feasibility of 40 samples separated by circular chromatography.

The book has been well produced, extensively illustrated, and includes 16 color plates. The text was found to contain few errors. The references are necessarily limited and end in 1975. The chromatographer will find useful information to adapt his technique to the more efficient plates. However, these new plates are expensive, and the price of nanoliter pipets is quite high.

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Industrial Solvents Handbook, by Ibert Mellan (Noyes Data Corp., Park Ridge, NJ, 1977, 567 p., \$39).

Since 1939, Ibert Mellan has authored several volumes on industrial solvents, and this book consists almost entirely of a compilation of graphs and tables from his earlier publications and from industrial literature; the latter seem to be reproduced verbatim. In fact, in some instances the trade names of mixtures are used. The book is slanted toward the coating industry, but the data given should be useful in many areas. However, the amount and kind of data for each compound vary considerably.

The tables and graphs are arranged under the headings of hydrocarbon solvents, halogenated hydrocarbons, nitro-paraffins, organic sulfur compounds, monohydric alcohols, polyhydric alcohols, phenols, aldehydes, ethers, glycol ethers, ketones, acids, amines, and esters. However, there seem to be some peculiar classifications. For example, epichlorohydrin, trifluoroacetic acid, and acid chlorides are found in the section on halogenated hydrocarbons, and methylal with the glycol ethers.

The tables and graphs given for ethylene glycol and sec-butyl chloride give an idea of the large variation in the amount and type of data presented. For sec-butyl chloride only a short table of physical properties is given. However, for ethylene glycol a much larger table of physical properties, and additional tables of boiling points, freezing points, densities, specific heats, and vapor pressures of aqueous solutions are given. A table of glycol azeotropes and graphs of vapor liquid composition, viscosity, dew points, and relative humectant values of aqueous solutions as well as graphs of moisture absorption of ethylene glycol at various relative and absolute humidities are reproduced.

This book contains a vast amount of useful data on industrial "solvents" but also a large amount of useless information. The amount of material in this latter category will differ for each of us.

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Pathophysiology, Vol. 3, "The Bile Acids," Edited by P.P. Nair and D. Kritchevsky (Plenum Press, New York, NY, 1976, 229 p., \$22.50).

This is the third volume in a series which previously considered the chemistry of the bile acids (Vol. 1, 1971) and their physiology and metabolism (Vol. 2, 1973). Nine chapters include Bile Acids and Brain, Nicholas; Tissue Distribution of the Bile Acids; Methodology and

Quantification, Dupont, Oh, and Janson; Bile-Salt-Protein Interactions, Nair; Bile Acids on Hepato-Biliary Diseases, Greim; Pathophysiology and Dissolution of Cholesterol Gallstones, Marks, Bonnorris, and Schoenfield; The Metabolism of Sterols and Bile Acids in Cerebrotendinous Xanthomatosis, Salem and Mosbach; Bile Acids and Intestinal Cancer, Nigro and Campbell; Fecal Steroids in the Etiology of Large Bowel Cancer, Hill; and Dietary Fiber and Bile Acid Metabolism, Kritchevsky and Story.

This volume covers a relatively broad range of topics. The first chapter attempting to link bile acids to demyelination seems rather speculative and strained. Kritchevsky has written and lectured so extensively on fiber the last few years that the material in the scant 7-½ pages thrown in on this topic as the final chapter are probably familiar to everyone. This reviewer found the chapter on methodology and the two chapters on cancer particularly interesting. Bile acid clean-up on Amberlite XAD-2 resin followed by enzymatic assay using 3- α -hydroxy-steroid dehydrogenase has facilitated the determination of these materials in extra-hepatic tissues including brain. It will be interesting to see what the significance, origin, and fate of these bile acids is.

The influence of environmental factors on the production of cancer has received extensive publicity in recent years. Dietary customs and habits have been linked through epidemiological studies to cancer of the large bowel. Reduction in dietary fiber slows the movement of wastes through the gut and may lead to enhanced microbial degradation of natural materials to carcinogens. Aromatization of bile acids is considered one such possibility. Anyone who has followed the literature reports on soy protein or has ingested quantities of these materials is quite familiar with the fact that diet may have a rather drastic effect on the nature and number of intestinal organisms. Once again we are being told that our eating habits may be contributing to our untimely death. Gallstones afflict enough of the population that many readers may have a personal interest in the progress of research to dissolve cholesterol gallstones. The interesting results which have been obtained through administration of chenodeoxycholic acid receive rather extensive coverage.

There has been considerable growth in interest in the bile acids within the last few years. The addition of this volume on pathophysiology of bile acids to the series which has already included chemistry and metabolism provides an extensive and comprehensive coverage of the field. Literature citations tend to be rather scarce but hopefully this represents careful selection. Figures and tables are of good quality.

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Durkee expanding research center

The Dwight P. Joyce Research Center in Strongsville, OH, is being expanded to 184,000 square feet from 120,000 square feet. The complex is the national research center for the Durkee Foods and Coatings and Resins Divisions of SCM Corporation.

The expansion will provide more laboratories and administrative space as well as more pilot plant facilities. Employment is expected to rise from 320 to slightly more than 500 when construction is completed in early 1979, according to an announcement from the firm.

The Joyce Research Center serves Durkee Industrial Foods Group which markets specialized ingredients for food processors; the Durkee Food Service Group, which markets food products for the institutional and restaurant trade; and the Durkee Consumer Foods Group, which markets retail food products. ●